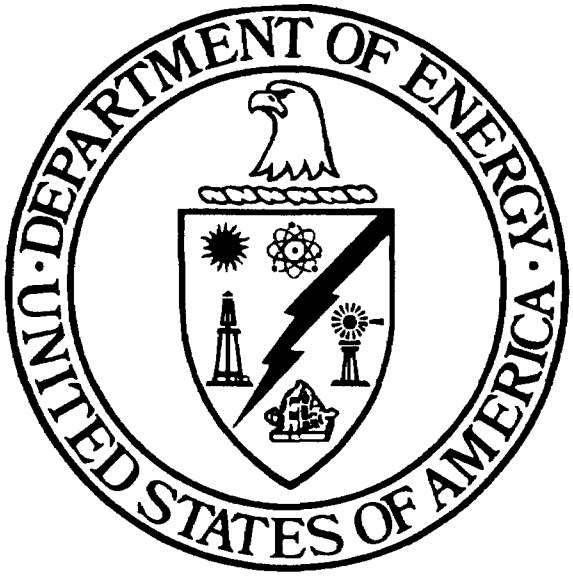
DOE/SNF/PP-033
Rev. 3

United States Department of Energy

National Spent Nuclear Fuel Program

Program Management Plan



May 2004

U.S. Department of Energy
Assistant Secretary for Environmental Management
Office of Nuclear Material and Spent Fuel

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Rev. 3

National Spent Nuclear Fuel Program
Program Management Plan

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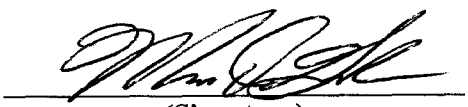
Approval: Mark Gardner  **Date:** 5/21/04

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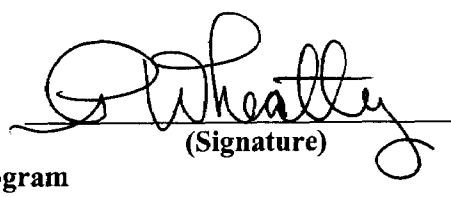
Submitted by: Philip Wheatley  **Date:** 5.21.04

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National Spent Nuclear Fuel Program
Program Support Organization Manager

ABSTRACT

This program management plan is the document that sets forth the mission, objectives, plan, organization, and responsibilities for those managing the U.S. Department of Energy (DOE) National Spent Nuclear Fuel Program (NSNFP). This plan is consistent with the *DOE-Owned Spent Nuclear Fuel Strategic Plan*; the spent nuclear fuel agreement between the State of Idaho, and the U.S. Navy and the DOE; and *The Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Radioactive Waste.* This program management plan will be revised when necessary to reflect any changes in program strategy, budget, organization, responsibility, or other change that might affect the mission and objectives of the NSNFP.

CONTENTS

FIGURES

ACRONYMS

DOE	U.S. Department of Energy
EM	Office of Environmental Management
INEEL	Idaho National Engineering and Environmental Laboratory
M&O	Management and Operations Contractor
MOA	Memorandum of Agreement
NE-ID	U.S. Department of Energy Idaho Operations Office
NEPA	National Environmental Policy Act
NRC	U.S. Nuclear Regulatory Commission
NSNFP	National Spent Nuclear Fuel Program
OCRWM	Office of Civilian Radioactive Waste Management
OQA	Office of Quality Assurance
PSO	Program Support Organization
QA	quality assurance
QAPM	Quality Assurance Program Manager
QAPP	Quality Assurance Program Plan
QARD	OCRWM Quality Assurance Requirements and Description
QAS	Quality Assurance Staff
ROD	record of decision
RW	Office of Civilian Radioactive Waste Management
SNF	spent nuclear fuel
WBS	work breakdown structure

Program Management Plan

1. INTRODUCTION

This document is the program management plan for the U.S. Department of Energy (DOE) National Spent Nuclear Fuel Program (NSNFP). This plan is consistent with the *DOE-Owned Spent Nuclear Fuel Strategic Plan*[1]; the spent nuclear fuel (SNF) agreement between the State of Idaho, and the U.S. Navy and the DOE; and the *Memorandum of Agreement* (MOA) *for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Radioactive Waste*[2] (as amended by the July 2001 Action Memorandum[3]). It is also consistent with DOE policies and the decisions made through the National Environmental Policy Act (NEPA) process. This document provides the NSNFP's organization, management, and plans for achieving its role in the ultimate disposition of DOE SNF.

1.1 Background

For many years the DOE has managed SNF to support various missions and programs. A process DOE used to manage this material was to chemically separate strategic material such as uranium or plutonium from the waste. As the need for uranium and plutonium decreased, however, it became necessary to store the unprocessed DOE SNF for extended periods of time. DOE had not intended for SNF to be in long-term storage.

In 1992, DOE decided to discontinue reprocessing SNF to recover strategic materials. Both the facilities used for storage and the fuel itself began experiencing the effects of "aging" from this extended storage. New efforts are now necessary to ensure fuel stabilization and facility management until decisions for SNF long-term disposition are made and implemented (according to the *DOE-Owned Spent Nuclear Fuel Strategic Plan*).

The term "DOE SNF" will be used throughout this document to represent DOE-managed fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. The fuel comes from research reactors, production reactors, naval reactors, etc., as well as SNF returned from domestic and foreign research reactors to be managed by DOE.

In 1992, the Secretary of Energy directed the Assistant Secretary for the Office of Environmental Management (EM) to develop an integrated, long-term SNF management program. The program would consolidate under EM all DOE SNF and associated facilities not addressed by the DOE Office of Civilian Radioactive Waste Management (OCRWM). The OCRWM mission is to develop and manage a federal system for disposing of all commercial SNF, DOE SNF, and high-level radioactive waste, resulting from atomic energy defense activities. EM is responsible for the management policy and process to prepare DOE SNF for transport and repository acceptance.

In June 1995, DOE issued the Record of Decision (ROD) on the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Program's Environmental Impact Statement.*[4] The ROD selected "Alternative 4A, Regionalization by Fuel Type" as the chosen option. This ROD was modified to agree with the Consent Order (PSC 1995)[5] issued on October 17, 1995, modifying the SNF shipments to and from the State of Idaho.

The amended version of the ROD mandates consolidation of all existing and newly generated SNF at three DOE sites prior to shipment for disposal as indicated below:

- Hanford production reactor fuel and fuel not requiring treatment will remain at Hanford; sodium-bonded Fast Flux Test Facility fuel will be shipped to the Idaho National Engineering and Environmental Laboratory (INEEL) for treatment.
- Naval fuel will be shipped to the INEEL for examination and interim storage.
- Nonaluminum-clad fuels will be consolidated at the INEEL, except Fort St. Vrain fuel, which is in Colorado and will remain there.
- Aluminum-clad fuels will be consolidated at the Savannah River Site.

Since 2002, EM has been establishing the Risk-Based End State Cleanup Project. This project redefines the approach that EM uses to conduct cleanup by changing it from one that is based on compliance with hundreds or thousands of individual and independent requirements and actions to one that is based on risk-based end states, and a clearly defined and coordinated path forward. EM has established several corporate project teams to address a variety of cleanup areas including SNF. The recommendation of this project team for SNF is being finalized within DOE. The approach to addressing DOE SNF disposition may be modified as a result of the Corporate Project Team recommendation.

Finally, plans are underway to transition the NSNFP from EM to OCWRM by October 1, 2004. Many aspects of the current NSNFP will be important to the continued success of OCRWM in dealing with DOE SNF and other EM waste forms that require geologic disposal. Integrating the program with OCWRM will help achieve the OCRWM objective to open a repository in 2010 and support the EM 2012 objective to accelerate preparation for disposal of its SNF and high-level waste. The transition of the NSNFP will provide the organizational framework to meet these objectives.

1.2 Purpose of the NSNFP

In October 1995, the SNF settlement agreement (Consent Order PSC 1995) between the State of Idaho, and DOE and the U.S. Navy, designated the INEEL as the DOE lead laboratory for SNF. The NSNFP is performing this role as stated in the agreement, "DOE shall direct the research, development and testing of treatment, shipment and disposal technologies for all DOE spent fuel, and all such DOE activities shall be coordinated and integrated under the direction of the Manager, DOE-Idaho Operations Office."

In this role, the NSNFP works with OCRWM, the Savannah River Site, the INEEL, the Hanford Site, and the Oak Ridge National Laboratory to:

- Achieve safe and timely disposal of DOE SNF
- Address national DOE SNF issues by identifying information needs, interfaces, and acceptance criteria and developing compliance procedures
- Support OCRWM during the license application process to the U.S. Nuclear Regulatory Commission (NRC)
- Provide quality assurance (QA) support.

The MOA for repository acceptance of DOE SNF further defines the role of the NSNFP. Through the MOA, the NSNFP works with OCRWM to seek to achieve safe and timely disposal of DOE SNF by identifying information needs, interfaces, and acceptance criteria. In addition, the NSNFP and OCRWM work to develop compliance plans needed to support both the geologic repository construction authorization and license application to the NRC.

As the NSNFP transitions from EM to OCRWM, its role will expand and evolve to better meet the needs of the OCRWM while continuing its stewardship role for DOE SNF.

1.2.1 Purpose of the Program Management Plan

This program management plan defines the NSNFP's current role and establishes the process to plan and implement research, development, testing, and DOE site integration and coordination as part of the EM SNF mission. This plan performs the following functions:

- Defines the mission and objectives of the NSNFP
- Describes the organization of the NSNFP, including its management and structure as it relates to external organizations
- Explains the interfaces among DOE-Headquarters, the DOE field sites, OCRWM, and related projects
- Summarizes the planning process including schedules, milestones, and the budget
- Addresses the management strategies for key projects within the NSNFP
- Defines the scope of the QA responsibility.

The NSNFP requires the integrated efforts of DOE- Headquarters, DOE field or operations offices, and contractors at various sites across the country to meet its objectives. This program management plan provides a uniform set of requirements and expectations for the NSNFP and also adheres to the established principles and guidelines for effective program planning and administration and DOE Order 430.1A, *Life Cycle Asset Management*.[6]

1.2.2 Plan Revisions

This program management plan is a living document that reflects the current status of the NSNFP. The document is controlled and will be revised as strategic decisions are made, progress is achieved, and additional information becomes available. At a minimum, limited revisions will be performed annually to embody the latest detailed work plan information. The transition of the NSNFP from EM to OCRWM will be incorporated into this program management plan when the transition details are finalized.

2. MISSION AND OBJECTIVES

2.1 Mission

The NSNFP mission is to provide the technology and guidance needed to ensure safe, efficient handling and disposition of DOE-owned SNF.

2.2 Objectives

The NSNFP provides technology solutions and guidance for safe, efficient management of DOE SNF at operating sites. In addition, it supports OCRWM in formulating a licensing strategy and by providing the analyses and research needed to consider all DOE SNF during the repository license application process. The following subsections describe the NSNFP objectives listed below:

- Objective 1—Address research, development, and testing needs
- Objective 2—Ensure DOE SNF acceptance criteria are established
- Objective 3—Ensure repository license includes DOE SNF
- Objective 4—Provide management, integration, and communication.

2.2.1 Objective 1—Address Research, Development, and Testing Needs

The NSNFP directs the research, development, and testing of treatment, shipment, storage, and disposal technologies for all DOE SNF. The NSNFP is challenged to help ensure safe, effective management of SNF generated from DOE, university, and other domestic sites, and foreign research reactors. With more than 200 types of fuel that must be managed, information and technology are vital to ensuring safe and efficient interim and long-term storage and transportation processes for all the DOE SNF.

The NSNFP collaborates with DOE laboratories to develop and deploy technologies. By coordinating common needs for research, technology development, and testing programs, the NSNFP can achieve cost efficiencies and eliminate redundant activities across all the DOE SNF sites. The NSNFP will address needs in four distinct areas of SNF management:

- Solutions for safe, efficient packaging and shipment technologies
- Solutions for safe, interim storage, and ultimate disposition at a repository
- Solutions for adequate characterization
- Compliance with safety and regulatory requirements.

2.2.1.1 Safe, Efficient Packaging and Shipment. According to the *Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Radioactive Waste*, EM will design and fabricate a standardized DOE SNF canister to accommodate the more than 200 types of DOE SNF. The NSNFP will support the development of the preliminary design, and DOE sites will be responsible for procurement of the canister and shipment.

The NSNFP will also perform research and technology development to support the SNF canister and DOE SNF shipments as needed. A remote welding and nondestructive examination process for closure welds is a technology needs example for safe packaging.

2.2.1.2 Safe, Interim Storage and Repository Disposal. The NSNFP will perform materials science research to address the common materials-related risks of interim storage at DOE SNF sites and repository disposal for the DOE SNF. At present these include:

- Developing a long-term corrosion-resistant advanced neutron absorber for components such as canister baskets
- Evaluating canister performance through materials aging, corrosion, degradations, and chemical reactivity testing.

2.2.1.3 Characterization. Consistent with the licensing strategy, the NSNFP must collect and evaluate DOE SNF information to increase confidence and minimize risk during the management of that fuel. The NSNFP will maintain a single source of technical information for all DOE SNF. The technical information will include isotopic information along with other information about mode of storage and physical location.

2.2.1.4 Compliance with Safety and Regulatory Requirements. The NSNFP will facilitate or perform research and contribute analysis in the following areas. This will minimize the risks associated with DOE SNF handling, transport, and disposal at the repository and will include:

- Design basis event analysis to identify possible accident scenarios associated with the handling and management of SNF at the repository and propose appropriate protection for those events
- Total system performance assessment to forecast the behavior of DOE SNF at the proposed repository and for the regulatory time periods
- Criticality analysis to examine criticality safety of DOE SNF and to establish control methods.

2.2.2 Objective 2—Ensure DOE SNF Acceptance Criteria Are Established

The NSNFP will provide a unified approach to the DOE SNF sites to prepare their fuel for transport to a repository. The NSNFP will provide guidance to DOE SNF sites to prepare fuel for transport and repository acceptance that is consistent with OCRWM requirements. It will also define the form and contents of the information package being shipped to the repository. The NSNFP will work with OCRWM to establish an acceptable information package for DOE SNF.

The program will provide the planning and integration to execute and conduct the necessary repository analyses and activities required to support the final disposal of DOE SNF. The NSNFP will support OCRWM information needs in the following areas to address repository acceptance requirements as they apply to DOE SNF:

- Postclosure performance
- Preclosure safety analysis
- Criticality analysis.

2.2.3 Objective 3—Ensure Repository License Includes DOE SNF

The NSNFP will closely support the needs of the repository program to achieve safe and timely disposal of DOE SNF. The NSNFP will support OCRWM in identifying the needed information, interfaces, acceptance criteria, and compliance procedures for license application and construction authorization of the repository and for the transportation system necessary to transfer DOE SNF. Specific goals to meet this objective include:

- Ensuring the DOE SNF is included in the repository design and documents
  - Environmental Impact Statement (1997–2000)
  - Viability Assessment (1998)
  - Site Recommendation (2001)
  - License Application (2004)
- Ensuring DOE SNF is acceptable for repository receipt
- Simplifying and minimizing characterization requirements for geological disposition of DOE SNF
- Ensuring characterization information meets requirements
- Assisting DOE SNF sites with repository-ready interim storage issues
- Codisposing highly enriched uranium SNF with high-level waste as a base case
- Supporting activities related to the shipment technologies for DOE SNF
- Ensuring OCRWM acceptance for a standardized DOE SNF canister to package fuel during transport and storage
- Establishing a licensing basis considering bounding analyses and performance-based criteria.

2.2.4 Objective 4—Provide Management, Integration, and Communication

The NSNFP will provide the policies, strategies, and programs for management of DOE SNF. It will coordinate DOE SNF program activities to establish the safest, most cost-effective path for interim storage and treatment while awaiting transportation to a geological repository.

The NSNFP will provide for the management direction and integration of NSNFP activities. The NSNFP will provide the planning, measurements, controls, and reporting needed to ensure its objectives are accomplished. NSNFP will maintain an OCRWM-accepted QA program.

The NSNFP will establish mechanisms to facilitate communication with DOE-EM, OCRWM, DOE SNF sites, and the stakeholders. Teleconferences, technical exchange meetings, web pages, integrated schedules, the DOE SNF database, and other mechanisms will be used to prompt effective communication to address DOE SNF issues.

3. MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

Operating from the DOE Idaho Operations Office (NE-ID), the NSNFP organization supports the SNF Program mission through the Logistics and Waste Disposition Enhancements Office within the Office of Environmental Management (EM-1). Figure 1 illustrates the NSNFP management hierarchy and organization.

3.1 National Spent Nuclear Fuel Program Manager, NE-ID

The NSNFP Manager resides at the NE-ID office and interfaces with the Manager of NE-ID and the DOE-EM Logistics and Waste Disposition Enhancements Office representative to establish overall policy and direction for the NSNFP. The NSNFP Manager establishes the responsibilities and authorities of the NSNFP organizations and management, and oversees the implementation of the NSNFP technical work tasks through approved detailed work plans and performance indicators. The NSNFP Manager uses NE-ID staff, such as the Quality Assurance Staff (QAS), and other appropriate resources to effectively oversee the activities of the NSNFP Program Support Organization (PSO).

Through NE-ID, the NSNFP Manager requests funding from DOE-EM to support its program plan. This position is further defined as part of the Consent Order between the State of Idaho, and DOE and the U.S. Navy. The NSNFP Manager integrates and coordinates activities with the DOE SNF sites, with other DOE Operations Offices, and OCRWM. The NSNFP Manager oversees research and technology development that provides solutions for DOE SNF management. Other responsibilities of the NE-ID Manager of the NSNFP include:

1. Directing the preparation of controlled documents describing the internal and external organizational interfaces, organizational structures, requirements, and responsibilities for acceptance by the OCRWM Office of Quality Assurance (OQA).

2. Approving the NSNFP Quality Assurance Program Plan (QAPP) and the Program Management Plan including:

    - The management and structure of the NSNFP organization

    - The NSNFP QA Program Policy directing mandatory compliance with the NSNFP QA Program.

3. Participating in the development and approval of memorandums of agreement between the DOE EM Program and OCRWM.

4. Participating in negotiations to redirect the NSNFP to be an OCRWM-driven program.

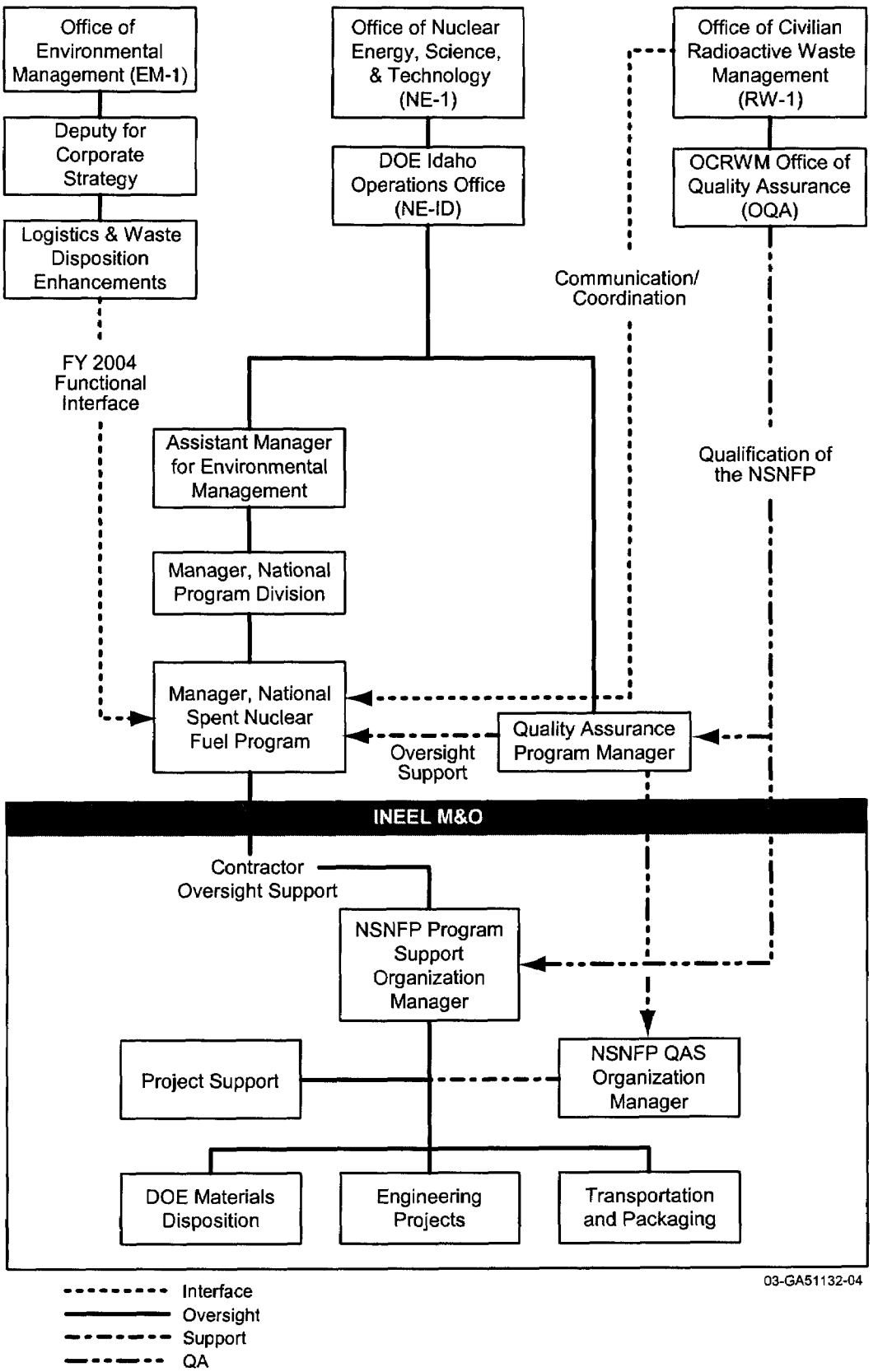

Figure 1. NSNFP management and organization interface.

3.2 NSNFP Quality Assurance Program Manager

The NE-ID NSNFP QA Program Manager (QAPM) manages the NSNFP QA Program. The program was established to ensure OCRWM quality requirements are consistently implemented for DOE SNF site activities that will be relied on to demonstrate DOE SNF compliance with repository acceptance. The NSNFP QAPM assigns NSNFP technical work tasks to the QAS organization through approved detailed work plans. The NSNFP QAPM functions include:

1. Participating in the development and approval of the NSNFP QAPP
2. Freely communicating with senior management positions within the NSNFP, DOE-ID, and EM
3. Interfacing with OCRWM OQA
4. Interpreting and approving QA program requirements
5. Providing Quality Engineering resources to the NSNFP PSO
6. Establishing internal controls and external interfaces for QA program oversight
7. Assigning tasks to the NSNFP QAS and monitoring the NSNFP QAS for performance to baseline documents
8. Maintaining a process to evaluate significant conditions adverse to quality and administering stop work actions if required
9. Participating in the development and approval of memorandums of agreement between the NSNFP and DOE SNF sites
10. Participating in the development and approval of memorandums of agreement between the DOE EM Program and the DOE OCRWM
11. Approving NSNFP procedures.

See Section 6 of this plan for further details. A QA staff supports the NSNFP QAPM.

3.3 NSNFP Program Support Organization Manager (INEEL Management and Operating [M&O] Contractor)

The NSNFP PSO Manager directs program activities of the NSNFP to implement the policy and direction provided by the NSNFP Manager, NE-ID. The NSNFP PSO Manager assigns NSNFP technical work tasks to the NSNFP Organization, including the NSNSP QAS that is matrixed to the NSNFP PSO. The NSNFP PSO Manager approves work assignments through approved detailed work plans. The NSNFP PSO Manager functions include:

1. Actively interfacing with the NSNFP Manager, NE-ID regarding program policy and performance and QA matters
2. Approving program management documentation and detailed work plans, life-cycle plans, and schedules

3. Establishing and maintaining the organizational structure to implement the NSNFP

4. Ensuring a QA organization for program assessments is established and maintained and is sufficiently independent from cost and schedule

5. Participating in the development and approval of memorandums of agreement between the DOE EM and OCRWM

6. Participating in negotiations to redirect the NSNFP to be an OCRWM-driven program.

3.4 NSNFP Quality Assurance Staff Manager (INEEL M&O Contractor)

The NSNFP QAS Manager directly supports the NSNFP PSO Manager through a matrix function. He implements the NSNFP QA Program as directed by the NSNFP QAPM to ensure OCRWM QA requirements are met within NSNFP. The NSNFP QAS Manager assigns work tasks to the QAS and performs the following functions:

1. Develops and maintains the NSNFP QAPP

2. Freely communicates with senior management positions within the NSNFP and DOE regarding QA activities

3. Interprets and implements QA program requirements for NSNFP

4. Provides Quality Engineering resources to the NSNFP PSO

5. Provides QA program internal assessments to NSNFP

6. Establishes controls for QA program oversight

7. Maintains a process to evaluate significant conditions adverse to quality and administer stop work actions if required

8. Participates in the development of memorandums of agreement between DOE-EM and OCRWM

9. Prepares quality-related procedures for NSNFP.

3.5 NSNFP Program Support Organization (INEEL M&O Contractor)

The NSNFP PSO works under the direction of the NSNFP PSO Manager. The organization supports the NSNFP mission by directing the research and technology development activities, and coordinating and integrating crosscutting functions with the DOE SNF sites, OCRWM, and other DOE organizations as requested by the NSNFP NE-ID Manager. The functions of the NSNFP PSO are as follows:

1. Prepares program management documentation and detailed work plans, plans and schedules integrated DOE SNF activities, tracks program commitments, supports the program's systems engineering approach, provides general technical support, and participates in technical working group activities

2. Prepares life-cycle planning documentation and funding request documents consistent with site schedules and repository planning documents

3. Supports the development and recommendation of implementation strategies for NEPA, NRC, and other regulatory requirements; assists with the technical preparation and review of NEPA documents; and assists with the complexwide programmatic review of NEPA documents

4. Addresses complexwide SNF vulnerabilities and safety issues by researching, assisting in preparing, reviewing, and recommending approval and concurrence with such studies and documents

5. Implements and maintains a complexwide SNF database that contains information on the quantity, condition, type, location, origin, and enrichment of all SNF within the DOE inventory

6. Directs the research, development, and testing of treatment, shipment, and disposal technologies for all DOE SNF

7. Prepares technology integration plans, supports waste analysis activities, assists with performance assessments and acceptance criteria, and develops stabilization technologies

8. Recommends safe, cost-effective, and technologically appropriate interim storage approaches and budgetary strategies; supports assessments on existing storage facilities; and integrates detailed transportation plans on how DOE SNF is to be moved and the routes to be used

9. Provides technical assistance to meet and resolve NSNFP issues related to the QA requirements

10. Establishes and maintains quality record systems and quality training systems.

3.6 Deputy for Corporate Strategy

This is a newly formed office through the EM reorganization. Roles and responsibilities of the organization have yet to be released from EM.

3.7 Office of Logistics and Waste Disposition Enhancements

The Office of Logistics and Waste Disposition Enhancements reports directly to the Deputy for Corporate Strategy. This office integrates DOE activities relating to nuclear materials stewardship in order to achieve safe, stable states for interim and long-term storage pending disposition. This is a newly formed office under the EM reorganization. Roles and responsibilities of the organization have yet to be released from EM.

3.8 Office of Civilian Radioactive Waste Management (RW-1)

The OCRWM Office of the Director has overall responsibility for providing leadership in developing a federal system for disposing of SNF from commercial nuclear reactors and SNF or high-level waste from national defense activities. The OCRWM Office of the Director communicates and coordinates with the NSNFP NE-ID Manager on topics related to DOE SNF disposition.

3.9 OCRWM Office of Quality Assurance (OQA)

OCRWM's OQA is responsible for the development and maintenance of the *Quality Assurance Requirements and Description* (QARD), DOE/RW-0333P.[7] Additional responsibilities include providing guidance and direction to the line organizations on QA matters, participating in reviews, and providing oversight of work subject to the QARD. In its oversight role, the OQA performs comprehensive audits and surveillances to verify that work is performed in accordance with the QA requirements. The results of the audits and surveillances for the NSNFP are reported to the NSNFP Program Manager, NE-ID. Any work that is not in compliance with the QA program is identified and tracked to ensure that corrective action is taken by the responsible line organization.

4. NSNFP INTERFACES

The NSNFP interfaces with a number of key participants to perform the DOE SNF mission. Each participant provides an important function in the success of the NSNFP mission and the ultimate disposition of DOE SNF. Figure 2 illustrates the primary NSNFP interfaces.

The primary interface for the disposition of DOE SNF occurs through the *Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Radioactive Waste*. This document defines this interface along with the responsibilities of EM and OCRWM with regard to SNF. The MOA establishes the terms and conditions under which OCRWM will make available disposal services to EM for all DOE SNF and high-level waste. The MOA was established between two main offices of DOE, the Office of Environmental Management (EM-1) and the Office of Civilian Radioactive Waste Management (RW-1).

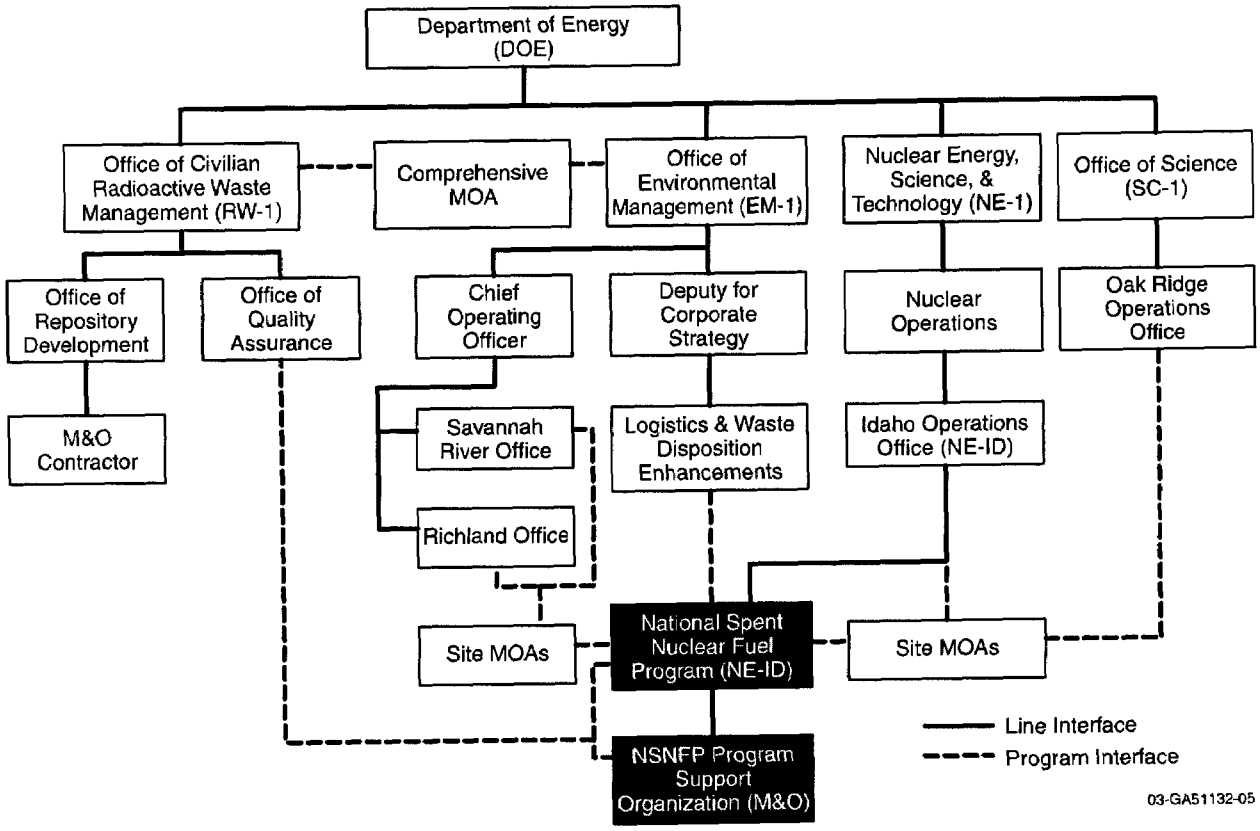

Figure 2. NSNFP interfaces.

4.1 NSNFP and Supporting Organizations

4.1.1 NSNFP

The NE-ID NSNFP Manager interfaces with several organizations to effectively achieve the NSNFP mission. The NSNFP defines its responsibilities and authorities through a technical interface with the Office of Logistics and Waste Disposition Enhancements and a direct line management interface with NE-ID. The NSNFP also plans and negotiates budget allocation through NE-ID. The NSNFP provides strategic direction and oversight to the NSNFP PSO to be formalized in detailed work planning. It provides guidance to all DOE SNF sites for technical matters related to repository acceptance.

In addition, the NSNFP interfaces with the Office of Repository Development regarding matters related to the terms and conditions listed in the MOA mentioned above and all matters related to DOE SNF inclusion in the repository. The NSNFP QAPP defines the interfaces of the NSNFP for quality-related matters.

4.1.2 NSNFP Program Support Organization

The NSNFP PSO is accountable to the NE-ID NSNFP Manager for implementing work scope defined through the Detailed Work Plan. The Work Breakdown Structure (WBS) of the Detailed Work Plan is described in Section 5 of this document. The NSNFP PSO interfaces with the Office of Repository Development and its M&O Contractor, and OCRWM on technical matters related to the acceptance of DOE SNF as agreed to with the NE-ID NSNFP Manager.

The NSNFP PSO also interfaces with the DOE SNF sites on technical matters regarding SNF characterization, packaging, storage, and shipment. Issues are addressed through strategic meetings, conference calls, and topical meetings and calls. Interfaces related to quality matters are defined in detail in the NSNFP QAPP.

4.1.3 NSNFP Quality Assurance Program

The OCRWM Director of Quality Assurance (RW-3) delegates authority to the NSNFP to execute the QA function as described in Section 1.2.2 of the QARD (see Reference 7). The NSNFP QAPM ensures that all QA matters related to the NSNFP during transition from EM to OCRWM are addressed. Refer to Section 6 for additional details.

The NSNFP QAPM communicates with senior management positions within the NSNFP and NE-ID. The NSNFP QAPM interfaces with the OCRWM Office of Quality Assurance to clarify QA program requirements. Detailed interfaces related to QA are defined in the NSNFP QAPP.

4.2 Office of Environmental Management

The Assistant Secretary for EM originally assigned the responsibilities for the NSNFP to the Office of Nuclear Material and Spent Fuel (EM-21) and has recently reassigned the responsibility to the newly established Office of Logistics and Waste Disposition Enhancements that reports to the Deputy for Corporate Strategy.

The newly established Chief Operating Officer has the authority over the Savannah River and Richland site field offices, which are responsible for final disposition of the SNF. The Office of Logistics and Waste Disposition Enhancements is responsible for funding the NSNFP in FY 2004. The NSNFP interfaces with EM by providing budget request documentation. EM allocates its funding authorization to NE-ID based on the priority of the work defined in the budget request documents.

4.3 Office of Civilian Radioactive Waste Management

The OCRWM Office of the Director has been delegated overall responsibility for carrying out the functions of the Secretary of Energy as prescribed in the Nuclear Waste Policy Act, as amended. The Office of the Director is responsible for providing leadership in developing and implementing strategies to accomplish the program's mission in a manner that ensures public and worker health and safety, protects the environment, merits public confidence, and is economically viable. The OCRWM Director delegates to OQA the responsiblity of the QA functions for the OCRWM program.

4.3.1 Office of Quality Assurance (RW-3)

The Director of the OQA (RW-3) has the responsiblity of the QA functions for the OCRWM program and oversees the implementation of the QARD, DOE/RW-0333P by the NSNFP. The QA oversees QA activities for the NSNFP by:

- Ensuring that a QA program that meets regulatory and management requirements is established, maintained, and effectively executed.
- Verifying that activities subject to the QARD have been correctly performed by reviews, surveillance, and audits (compliance and performance based), or other means of verification, as appropriate.

4.4 DOE SNF Field Offices

The DOE field offices and their contractors interface with the NSNFP on matters of coordination and integration of DOE SNF activities. The field offices/sites include the Savannah River Site, the Hanford Site, the Oak Ridge National Laboratory, and the INEEL. Site contractors implement the actions that result from the coordination activities. Interfaces with the NSNFP specifically address:

- Coordinating and establishing DOE sites' SNF disposal effort using an integrated shipping schedule
- Identifying and addressing national DOE SNF issues such as characterization and packaging of SNF
- Establishing successful SNF disposal strategies.

The DOE SNF operating programs interface with the NSNFP QA Program via individual MOAs. The MOAs document the coordination of the NSNFP including the NSNFP QA Program with each of the sites. The MOAs also address the flow-down of technical requirements to the DOE operating sites and the implementation of those technical requirements. Effective April 1, 2004, the responsibility for QA oversight of DOE SNF site activities was formally transferred to the EM/OCRWM QA Oversight Team. The DOE SNF sites were requested to honor their existing Memorandum of Agreement (MOA) commitments for periodic status updates and to transmit them directly to the EM/OCRWM QA Oversight Team.

4.5 External Interfaces

In addition to the external interfaces already discussed above, the NSNFP interfaces with numerous organizations external to the DOE SNF Program to ensure successful completion of the NSNFP mission and to establish opportunities to apply SNF solutions to address other waste issues.

4.5.1 Other Federal Agencies

The NSNFP supports OCRWM as it interfaces with the NRC for repository licensing and certification. This support to OCRWM provides the means to ensure DOE SNF is fully incorporated in the license application documents.

4.5.2 Industrial Standards Organizations

The NSNFP has technical experts participating on committees for both the American Society of Mechanical Engineers and the American Society for Testing and Materials. Through these committee members, the NSNFP is applying SNF expertise to address national issues while working to ensure these standards address the material science and canister needs of the program.

4.5.3 Other DOE National and Waste Programs

The NSNFP has established interfaces with other waste and national programs to find integrated solutions to the common needs of these programs. The EM SNF programs have many overlapping issues with its high-level waste program activities. Interfaces are being established between these two programs to share solutions and find efficient ways to address their common issues.

5. SUMMARY WORK SCOPE

5.1 Work Breakdown Structure

Figure 3 is the NSNFP Project WBS, a product-oriented hierarchy of the work and products.

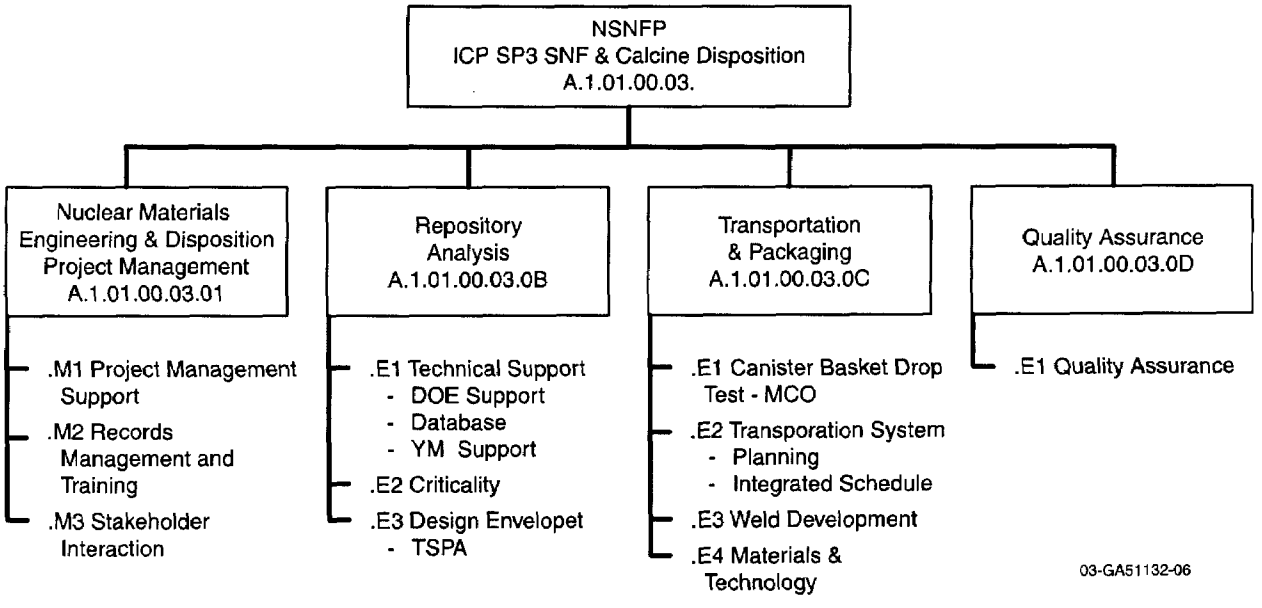

Figure 3. NSNFP work breakdown structure.

5.2 Work Breakdown Structure Dictionary

This section provides a brief description of each of the elements defined in the WBSs. A summary of the Fiscal Year 2004 Detailed Work Plan budget, schedule, and milestones is provided in Appendix A of this document.

5.2.1 Subproject Level

A.1.01.00.03—National SNF Program, a Portion of ICP PBS A CPP-SP3 SNF and Calcine Disposition. The objective of the NSNFP is to define and ensure resolution of all associated issues for the characterization, safe interim storage, and proper final disposition of all DOE SNF. The technical strategy of the NSNFP is to develop innovative approaches and products designed to move DOE SNF closer to its final disposition. The following are the control account summaries for the NSNFP.

5.2.2 Control Account Level

A.1.01.00.03.01—CPP-SP3 Nuclear Materials Engineering and Disposition P.M. Provide the program management for the NSNFP to ensure the inclusion of DOE SNF in the repository programs site evaluation, design, and licensing activities. This work directly supports commitments made between DOE-EM and DOE-RW regarding the scope of activities that are required under the repository licensing criteria in 10 CRF Part 63. The program management effort includes the preparation of program planning documentation, management and integration planning, development and conduct of strategic planning meetings, monthly budget and schedule reports, funding documentation, program tracking systems inputs, monthly program performance reviews, interactions with an independent QA staff, records management processes and systems, maintenance of reference libraries and program control

documentation, and maintenance of a national level schedule for DOE SNF management. Particular focus is given to coordinating and facilitating DOE sites' SNF disposal efforts, maintaining an effective stakeholder involvement program and interfaces, managing national DOE SNF issues, and interfacing with the Yucca Mountain Repository Program.

A.1.01.00.03.0B—CPP-SP3 Repository Analysis. Perform repository specific analyses for DOE SNF to support inclusion of DOE SNF in the repository programs site evaluation, design, and licensing activities. This work directly supports commitments made between DOE-EM and DOE-RW regarding the scope of analyses that are required under the repository licensing criteria in 10 CRF Part 63. All analyses currently support the planned December 2004 repository license application submittal to the NRC. The types of analyses to be performed support preclosure and postclosure criticality safety; waste package thermal, structural, and radiation shielding analyses; compatibility with the repository environment; trade-off studies of alternative waste package or repository designs; preclosure safety analysis; and postclosure total system performance assessment for DOE SNF. Work planning and documentation under this activity requires close interface with DOE's OCRWM Yucca Mountain Repository Program, which defines the requirements to be satisfied and serves as the primary outside customer for the work performed. Additional tasks include modeling, analysis, and experimentation to evaluate any unique characteristics of DOE SNF waste forms. Under this work, a detailed SNF database is maintained and updated to support DOE plans for ultimate disposition of DOE SNF. This work also provides coordination of DOE sites input into SNF waste certification activities to ensure that DOE SNF will be accepted at the repository. The scope also includes data analyses and report preparation as needed to support project planning and technical tasks within the project.

A.1.01.00.03.0C—CPP-SP3 Transportation and Packaging. Provide standardized canister design input data for the packaging, interim storage, shipment, and disposal DOE SNF in accordance with the MOA between the Office of EM and the OCRWM. Perform additional evaluations, including comparison of the NSNFP standardized canister against the final design of the canister being developed for the Idaho Dry Storage Facility, and analysis of the multi-canister overpack being used at Hanford for survivability during handling accidents at the repository surface facility. Testing will be performed to ensure validation of codes and compliance with established requirements. Developments affecting the design, loading, and handling aspects will be communicated to user organizations. Provide support to OCRWM for transfer of the DOE EM transportation cask system specifications and the responsibility for procurement of the design, certification, and fabrication of the transportation casks and auxiliary equipment. Provide an interface between OCRWM and the sites on transportation issues and support for document review and commenting. Provide support and analysis for the welding and nondestructive examination of final closure weld of the standardized canister. Perform materials and packaging activities including materials testing and analysis, neutron absorber development, and interfaces with technical and regulatory bodies involved with requirements on SNF-related materials and processes. Develop solutions for materials issues involved with DOE SNF handling, storage, transport, and disposal. Evaluate treatment technologies for SNF that may not be directly disposed in the repository. Continue Advanced Neutron Absorber development in support of packaging, transportation, and disposal.

A.1.01.00.03.0E—CPP-SP3 Quality Assurance. Provide trained and qualified QA staff to support the NSNFP to develop and maintain the NSNFP QA Program. Provide a QA staff to support the quality affecting activities performed by NSNFP technical staff and ensure that those activities are performed in accordance with the NSNFP QA Manual and the OCRWM QARD, DOE/RW-0333P (Reference 7). The NSNFP is approved as an "affected organization" of OCRWM, as such OCRWM mandates that the NSNFP maintain compliance with the QARD to ensure compliance with the regulatory requirements of 10 CFR 50, Appendix B; 10 CFR 60, Subpart G; 10 CFR 71, Subpart H; and 10 CFR 72, Subpart G. Maintaining compliance with these regulatory requirements will ensure ultimate acceptance and disposal of DOE SNF at the licensed repository.

6. QUALITY ASSURANCE

The NSNFP QAPP describes the NSNFP QA policy, the NSNFP organization structure, the internal and external QA interfaces, the general QA program principles applicable to the scope for the NSNFP mission, and the roles and responsibilities of the NSNFP with respect to QA. The NSNFP adopts QARD principles for engineering and design-related activities intended to guide the development of a path forward for successful disposition of DOE SNF. Work performed by the NSNFP that will be relied on to develop design requirements and to demonstrate DOE SNF compliance with repository acceptance requirements is subject to the QARD. In accordance with QARD 1.3.3, the NSNFP implements QA requirements by complying with NSNFP implementing procedures.

The NSNFP policy is to institute, implement, and maintain an effective QA program in all aspects of its work that may affect the safety and protection of workers, the public, or the environment. The NSNFP QA Program has been developed with these objectives in mind as defined in the QAPP.

7. REFERENCES

1. DOE (U.S. Department of Energy), *DOE-Owned Spent Nuclear Fuel Strategic Plan*, Revision 1, Office of Environmental Management, Washington, D.C., September 1996.

2. DOE, *Memorandum of Agreement for Acceptance of Department of Energy Spent Nuclear Fuel and High-Level Radioactive Waste,* Revision 1, between the Assistant Secretary for DOE-EM, Washington, D.C., and the Director of DOE-RW, Washington, D.C., January 1999.

3. DOE, Action Memorandum to Approve Transfer of Responsibility of the Design, NRC Certification, and Fabrication of the Transportation Cask System, July 2002.

4. DOE, *Department of Energy's Record of Decisions for Programmatic Spent Nuclear Fuel and Idaho National Engineering Laboratory, Environmental Restoration and Waste Management Programs*, as amended, March 1996.

5. DOE, Consent Order (PSC 1995) for spent nuclear fuel among the State of Idaho, the U.S. Navy, and the U.S. Department of Energy, October 1995.

6. DOE, *Life Cycle Asset Management,* DOE O 430.1A, October 14, 1998.

7. DOE, *Quality Assurance Requirements and Description*, Revision 13, Office of Civilian Radioactive Waste Management DOE/RW-0333P, April 28, 2003.